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# Consumer Bill of Rights and Responsibilities



REPORT TO THE  
PRESIDENT OF THE UNITED STATES

Advisory Commission on Consumer Protection and Quality in the Health Care Industry



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**MMWR<sup>TM</sup>**  
**MORBIDITY AND MORTALITY**  
**WEEKLY REPORT**

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**Ten Great Public Health Achievements — United States, 1900–1999**

During the 20th century, the health and life expectancy of persons residing in the United States improved dramatically. Since 1900, the average lifespan of persons in the United States has lengthened by >30 years; 25 years of this gain are attributable to advances in public health (1). To highlight these advances, *MMWR* will profile 10 public health achievements (see box) in a series of reports published through December 1999.

Many notable public health achievements have occurred during the 1900s, and other accomplishments could have been selected for the list. The choices for topics for this list were based on the opportunity for prevention and the impact on death, illness, and disability in the United States and are not ranked by order of importance.

The first report in this series focuses on vaccination, which has resulted in the eradication of smallpox; elimination of poliomyelitis in the Americas; and control of measles, rubella, tetanus, diphtheria, *Haemophilus influenzae* type b, and other infectious diseases in the United States and other parts of the world.

**Ten Great Public Health Achievements — United States, 1900–1999**

- Vaccination
- Motor-vehicle safety
- Safer workplaces
- Control of infectious diseases
- Decline in deaths from coronary heart disease and stroke
- Safer and healthier foods
- Healthier mothers and babies
- Family planning
- Fluoridation of drinking water
- Recognition of tobacco use as a health hazard

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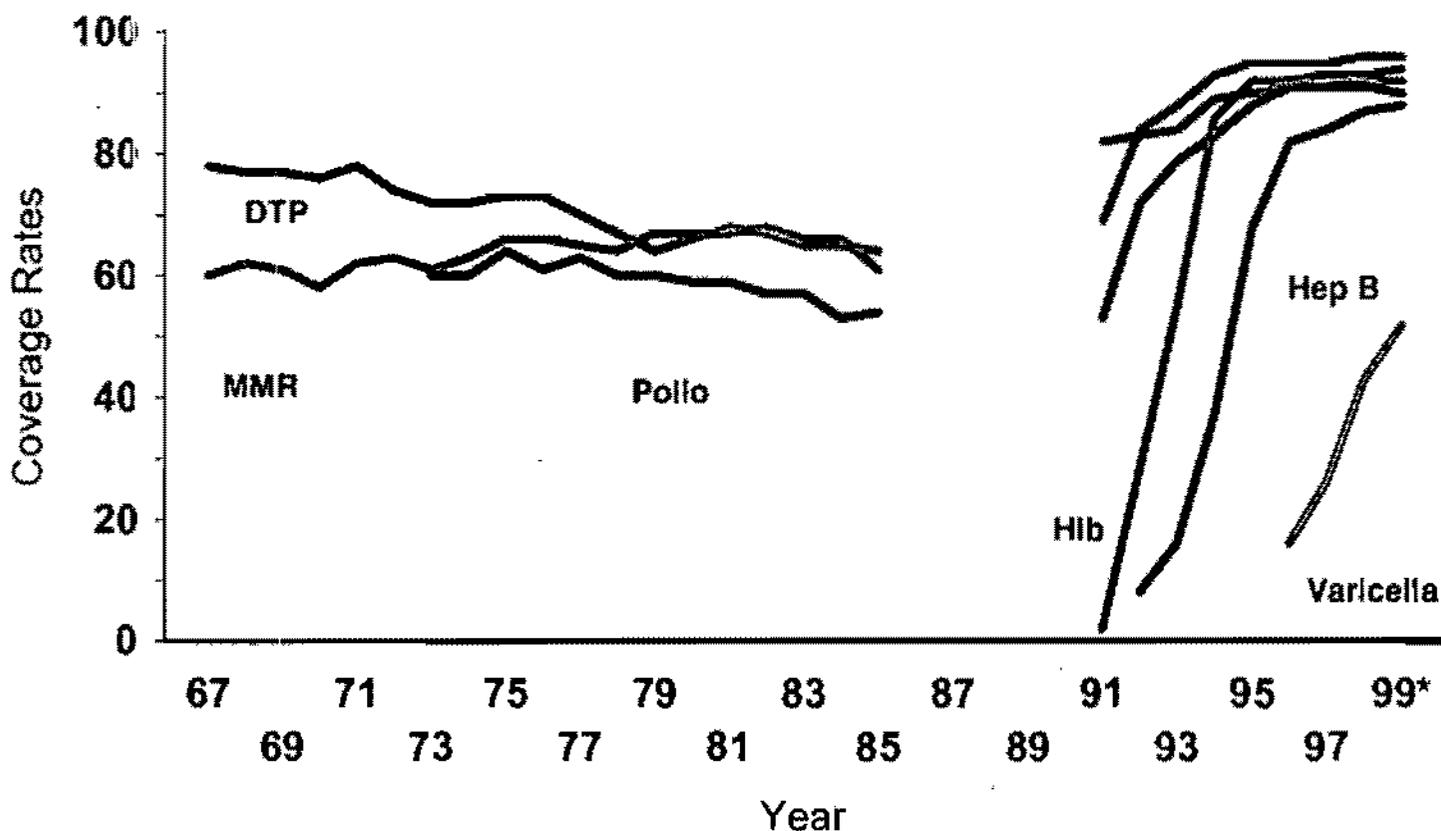
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# Vaccine Specific Coverage Rates Among U.S. 2 Year Olds, 1967 - 1999



\* Data from July 1988 - June 1999

Source: USIS (1967-1985) and NHIS (1991-1993)  
National Immunization Survey, 1994-1998



National Immunization Program





# The Childhood Immunization Initiative

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## Challenges

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- Vaccines are the most powerful and cost-effective ways to prevent nine infectious diseases in children.
  - Cases of measles, polio, and other diseases have decreased by over 99 percent since introduction of vaccines.
  - The estimated benefit-cost ratio of vaccines (dollars saved by society for every dollar spent) is over 21:1 for measles/mumps/rubella vaccine, is over 30:1 for diphtheria/tetanus/pertussis vaccine, and is over 6:1 for polio vaccine.
- Although over 96 percent of children are adequately vaccinated by kindergarten, about 15 to 35 percent of children under age two are inadequately protected against these childhood diseases.
- Between 11-15 vaccine doses are due by age 2, requiring about five visits to providers. This is about 80 percent of all vaccine doses recommended for children.
- Failure to immunize children on time led to the 1989-1991 measles epidemic, which resulted in over 55,000 cases and 11,000 hospitalizations.

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## Goals

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- The Childhood Immunization Initiative (CII) has been launched to make sure that children do not become sick or die from vaccine-preventable diseases.
- Specific and urgent goals to be accomplished by 1996 are to:
  - reduce most diseases preventable by childhood vaccination to zero.
  - increase vaccination levels for 2-year-old children to at least 90 percent for the initial and most critical doses in the vaccine series, and 70 percent for a more recent vaccine (hepatitis B).
  - build a vaccine delivery system to maintain these achievements in the United States.
- By the year 2000, a comprehensive infrastructure will be in place to provide the full series of vaccines for at least 90 percent of all children.

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## Actions

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- Since 1963, the Centers for Disease Control and Prevention (CDC) has been responsible for providing vaccine, management, technical assistance, information, epidemiology, assessment, and other national immunization services. These efforts have been targeted to State and local health departments and other partners. The CII enhances CDC's traditional efforts with significant resources and activities that now address immunization issues in a comprehensive manner. CII enhances the following five broad areas designed to attain the goals for 1996 and beyond.
  - I. Improve the quality and quantity of vaccination delivery services
  - II. Reduce vaccine costs for parents (through the Vaccines for Children Program)
  - III. Increase community participation, education, and partnerships
  - IV. Improve monitoring of disease and vaccination coverage
  - V. Improve vaccines and vaccine use



U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES  
Public Health Service



**Childhood Immunization Initiative  
Vaccination Coverage for 1992\* 1993\*<sup>§</sup> and Vaccine  
Coverage Goals for 1996 and 2000<sup>¶</sup>**

Vaccine	1992	1993	1996	2000
DTP 3+	83	87	90	90
OPV 3	72	78	90	90
MMR	83	81	90	90
Hib 3+	—	50	90	90
Hep B 3	—	13	70	90
<b>DTP 4</b>	<b>59</b>	<b>71</b>		<b>90</b>
<b>DTP 4, OPV 3, MMR, Hib 3+, and Hep B 3**</b>	<b>55</b>	<b>65</b>		<b>90</b>

\* Coverage for children 19-35 months of age.

<sup>§</sup> Provisional data based on 1st and 2nd quarters.

<sup>¶</sup> Healthy People 2000 goals have not changed.

\*\* 1992 and 1993 data are only for DTP4, OPV 3, and MMR

# VFC

Vaccines for Children

Program Introduction, May 1994

The Vaccines for Children (VFC) program is a new federally funded and state-operated vaccine supply program that will begin October 1, 1994. The program is intended to help raise childhood immunization levels in the United States, especially among infants and young children. The program will supply—at no cost to all public health care providers and to private health care providers who agree to participate—federally purchased vaccine to be administered to children in certain groups. Approximately 60% of U.S. children may be expected to benefit from the VFC program.

- During the first year of the VFC program, approximately \$460 million of federal funds will be expended to purchase and deliver vaccine to health care providers nationwide.
- Participating physicians will no longer need to refer many children in their care to public providers for immunizations if parents cannot afford the out-of-pocket cost for vaccines.
- Private health care providers can administer the VFC-provided vaccines to their eligible patients.

## Children Eligible for the VFC Program

The VFC program was created to meet the vaccination needs of children from birth through 18 years of age.

Children eligible to receive VFC-provided vaccines include the following: 1) children enrolled in Medicaid; 2) children who do not have health insurance; and 3) children who are American Indian or Alaskan Native.

In addition, children who have health insurance that does not cover vaccine can receive VFC-provided vaccines at federally qualified health centers (community/migrant health centers) and rural health clinics. Some states will use their own funds or other federal funds to provide free vaccines to private providers to administer to children who are not covered by the VFC program.

## Private Provider Enrollment

To participate in the VFC program, providers need to agree to: 1) screen the parent or guardian to determine the child's eligibility (verification is not required); 2) maintain a record of this screening with the eligible child's record; 3) follow the recommended immunization schedule as established by the ACIP and state law (individual medical judgment may be exercised).



U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES  
Public Health Service

**CDC**  
CENTERS FOR DISEASE CONTROL  
AND PREVENTION

[The American Academy of Pediatrics schedule conforms with the ACIP recommendations]; 4) not charge for the VFC supplied vaccine (an administration fee, to be established by the Health Care Financing Administration, can be charged so long as immunization is not denied because the fee cannot be paid); and 5) provide vaccine information materials as prescribed by law (required of all providers regardless of their enrollment status in the VFC program).

- A private health care provider is not required to accept a child into his or her practice or clinic merely because the child is eligible for immunization through the VFC program.
- A physician may participate in the VFC program without being a Medicaid provider.

To enroll, the provider agrees to participate in the program and follow specific state requirements. The signed one-page provider enrollment agreement is kept on file at the state health department.

## Vaccine Ordering and Supply

Once enrolled in the VFC program, private health care providers will complete a simple one-page "Provider Profile." The profile will be retained by the state health department to determine the number of patients expected to be seen for immunization services and the percentage of patients in the provider's practice that may be eligible for immunization through the VFC program.

Private providers who enroll in the VFC program by August 1994 and return the Provider Profile to their state will be supplied in September with vaccine at no cost to administer to eligible children beginning October 1, 1994.

The VFC program will provide a ready inventory of federally purchased vaccine to the private provider and will eliminate some upfront costs in providing vaccine to eligible children. Methods used to account for vaccine use will be determined by the states. The vaccine ordered through the state need not be separated or coded in a provider's practice or clinic according to the funds used to purchase it by the state.

The system that health care providers use to purchase vaccine for their private-pay patients will remain unchanged.

Currently, the vaccines and combination vaccines offered with the VFC program are those providing protection against nine diseases:

- diphtheria,
- *Haemophilus influenzae* type b
- hepatitis B
- measles
- mumps
- pertussis
- poliomyelitis
- rubella
- tetanus

New and combination vaccines such as DTaP and DTP/Hib will be supplied to providers through this program. As new and combination vaccines are approved by the FDA and recommended by the ACIP, they will be added to the program.

The national goal to adequately vaccinate 90% of 2-year-old children depends on the support of private health care providers. The Vaccines for Children program contributes to this goal by removing vaccine cost as a barrier to immunizing eligible children in the care of private health care providers. Additional information is available through your state health department.

# HHS FACT SHEET

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

April, 1995

Contact: CDC Press Office  
(404) 639-3286

## THE CHILDHOOD IMMUNIZATION INITIATIVE

Childhood immunization was one of the earliest priorities of the Clinton Administration. In response to disturbing gaps in the immunization rates for young children in America, the Administration designed a comprehensive Childhood Immunization Initiative. This national initiative addresses five areas:

- 1) Improving immunization services for needy families, especially in public health clinics
- 2) Reducing vaccine costs for lower-income and uninsured families, especially for vaccines provided in private physician offices
- 3) Building community networks to reach out to families and ensure that young children are vaccinated as needed
- 4) Improving systems for monitoring diseases and vaccinations
- 5) Improving vaccines and vaccine use.

At the same time, the Administration and Congress committed substantial new resources for immunization, including significant budget increases for service delivery improvements and for purchase of vaccine to be made available to needy children.

### PROBLEM:

Today, more than a million children under age 2 are not fully vaccinated against disease. Some of the reasons:

- There are not enough public clinics; clinic hours and locations are often inconvenient for parents; clinics are short-staffed.
- Vaccines are expensive. The cost of the full series has increased ten-fold from \$27 in 1983 to \$265 today.
- Many parents are unaware of the need to immunize by age 2. In addition, vaccine schedules can be confusing -- and there's no standardized system for monitoring vaccinations or notifying parents when vaccinations are due.

**GOALS:**

The Childhood Immunization Initiative will build a comprehensive vaccination delivery system. It will integrate efforts of the public and private sectors, health care professionals and volunteer organizations. The goals:

- By 1996, to increase vaccination levels for 2-year-olds to at least 90 percent for the initial and most critical doses, and to reduce most diseases preventable by childhood vaccination to zero.
- By 2000, to have in place a system that will ensure at least 90 percent of all 2-year-olds receive the full series of vaccines.

**BUDGET:**

The Centers for Disease Control and Prevention manages the National Childhood Immunization Initiative. The President's FY 1996 budget proposal includes a total of \$843 million for child immunization and purchase of vaccine.

- In all, funding for child immunization has doubled since President Clinton's inauguration.

**THE INITIATIVE:**

The Childhood Immunization Initiative will focus on five areas:

1) Improve the quality and quantity of vaccination delivery services --

- CDC will provide funds and assistance to open new public health clinics, extend clinic hours and hire new staff.
- CDC will provide its primary support through state and local Immunization Action Plans, which coordinate local efforts and tailor activities to specific state and local needs. Performance-based funding will reward those IAPs which meet or exceed immunization targets.
- The President's FY 1996 budget request includes \$177 million to continue service delivery improvements thru new Immunization Performance Partnership grants. This represents a four-fold increase for state Immunization Action Plans compared with \$45 million in FY 1993.

2) Reduce vaccine costs for parents --

- A new Vaccines for Children program is designed to provide free vaccine to about 60 percent of the nation's children, starting in October, 1994. Eligible children include those without insurance coverage, those who are eligible for Medicaid, and American Indians and Alaska Natives.
- The President's FY 1996 budget request includes \$493 million for vaccine purchase, approximately the same level as in FY 1995 -- however, this represents a 15 percent increase in amount of vaccine purchased, due to a proposed reduction in excise tax. Vaccine purchase funding this year is 37 percent higher than the amount expended in FY 1994.
- States have the ability to buy vaccines at reduced federal contract prices. About half the states plan to supply vaccine for all their children at the lower federal price.
- CDC will continue to provide immunization grant funds to help states obtain vaccine for children who are not eligible for the new VFC program, but who still need access to free vaccine.

3) Increase community participation, education and partnerships --

- The initiative will increase awareness of proper immunization, coordinate local resources, and enlist national organizations. A national outreach program will be launched, with outreach coordinators placed in each HHS region. Regional meetings are also being convened to draw organizations together.
- New public service announcements have been produced for TV, radio and print media.
- Toll-free information services refer callers to local immunization providers and provide prerecorded information in English and Spanish. Toll-free number: 1-800-232-2522.
- Outreach to health care professionals will ensure they don't miss opportunities to vaccinate infants and pre-schoolers.

4) Improve systems to monitor diseases and vaccinations --

- An improved system for monitoring vaccine-preventable diseases will help spot problems early and enable action to prevent a few cases from escalating into epidemics.
- CDC will support investigation of each case of vaccine-preventable disease targeted for elimination.

5) Improve vaccines and vaccine use --

- The initiative will support efforts to develop a single childhood immunization schedule. It will also support research into new vaccines and vaccine combinations to reduce the number of shots children must get, and to ensure safe and effective vaccines.

**OTHER BACKGROUND:**

- Childhood vaccines prevent nine infectious diseases: polio, measles, diphtheria, mumps, pertussis (whooping cough), rubella (German measles), tetanus, spinal meningitis, and hepatitis-B.
- Between 11-15 vaccine doses are due by age 2, requiring about five visits to health care providers. This is about 80 percent of all vaccine doses recommended for children.
- Children are required to be immunized in order to enter school, and more than 96 percent of American children are adequately vaccinated by kindergarten. Yet among pre-school children, the United States has a poor vaccination record. This means millions of young children are not adequately protected against illness and possible death.
- With increasing numbers of children more readily exposed to infectious disease in day-care settings, complete immunization by age 2 is critical.
- Failure to immunize can lead to new outbreaks of disease. In 1989-91, a measles epidemic resulted in more than 55,000 reported cases, 11,000 hospitalizations, and more 130 deaths. Half of the deaths were infants.
- Vaccines are cost-effective. More than \$21 are saved for every \$1 spent on measles/mumps/rubella vaccine; more than \$30 are saved for every \$1 spent on diphtheria/tetanus/pertussis vaccine; and more than \$6 are saved for every \$1 spent on polio vaccine.

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# **The Childhood Immunization Initiative**

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*National Immunization Program,  
Centers for Disease Control and Prevention*

*April, 1994*

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# The Childhood Immunization Initiative

## Challenges

- Vaccines are the most powerful and cost-effective ways to prevent nine infectious diseases in children.
  - Cases of measles, polio and other diseases have decreased by over 99 percent since introduction of vaccines.
  - The estimated benefit-cost ratio of vaccines (dollars saved by society for every dollar spent) is over 21:1 for measles/mumps/rubella vaccine, is over 30:1 for diphtheria/tetanus/pertussis vaccine, and is over 6:1 for polio vaccine.
- Although over 96 percent of children are adequately vaccinated by kindergarten, about 15 to 35 percent of children under age two are inadequately protected against these childhood diseases.
- Between 11-15 vaccine doses are due by age 2, requiring about 5 visits to providers. This is about 80 percent of all vaccine doses recommended for children.
- Failure to immunize children on time led to the 1989-1991 measles epidemic which resulted in over 55,000 cases and 11,000 hospitalizations.

## Goals

- The Childhood Immunization Initiative (CII) has been launched by President Clinton to make sure that children do not become sick or die from vaccine preventable diseases.
- Specific and urgent goals to be accomplished by 1996 are (*See Attachment*)
  - reduce most diseases preventable by childhood vaccination to zero.
  - increase vaccination levels for 2-year-old children to at least 90 percent for the initial and most critical doses in the vaccine series, and 70 percent for a more recent vaccine (Hepatitis B).
  - build a vaccine delivery system to maintain these achievements in the United States within a reformed health care system.
- By the year 2000, a comprehensive infrastructure will be in place to provide the full series of vaccines for at least 90 percent of all children.

## Actions

- Since 1963, the Centers for Disease Control and Prevention (CDC) has been responsible for providing vaccine, management, technical assistance, information, epidemiology, assessment, and other national immunization services. These efforts have been targeted to State and local health departments and other partners. The CII enhances CDC's traditional efforts with significant resources and activities that now address immunization issues in a comprehensive manner. CII enhances the following five broad areas designed to attain the goals for 1996 and beyond.
  - I. Improve the quality and quantity of vaccination delivery services
  - II. Reduce vaccine costs for parents (through the Vaccines for Children Program)
  - III. Increase community participation, education, and partnerships
  - IV. Improve monitoring of disease and vaccination coverage
  - V. Improve vaccines and vaccine use

CDC has developed an extensive Action Plan which includes objectives, action steps, and comprehensive timelines designed to achieve the CII goals.

# Improve the Quality and Quantity of Vaccination Delivery Services

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## Challenges

- Since 1963, the Federal Immunization Grant Program ("317" Grants) has assisted States in purchasing vaccines and managing programs. However, Federal grant funds could not be used to improve the immunization delivery infrastructure e.g., hire staff to give vaccines.
- The public health system, which serves about 1/2 of our Nation's children, was seriously eroded in the 1980's
- Parents faced serious barriers and obstacles to immunization
  - Inadequate clinic staff, inconvenient hours, insufficient locations, and other barriers.
  - Many missed opportunities to provide vaccines at health care visits.
  - Inadequate systems to remind parents when vaccinations were due for their children and for doctors and nurses to determine immunization needs quickly at each office visit.

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## Solutions

- Immunization Action Plans (IAPs) - Beginning in 1992 as a new component of 317 grants, Federal grant funds were awarded by CDC to begin making seriously needed improvements to the vaccine delivery infrastructure. These IAP funds were supplied to 87 State, Territorial, and local health agencies. In 1994, as part of the CII, IAP funding was tripled to \$128 million. These funds were awarded based on comprehensive State and local IAP's detailing the State and local actions needed to meet immunization coverage targets for children.
- Performance-based funding - About 30 percent of IAP funding is based on meeting coverage targets. In addition, \$33 million in new 1994 incentive funds are available for States achieving high coverage rates as outlined in legislation.
- *Standards for Pediatric Immunization Practices* - These Standards consist of 18 immunization practices that all immunization providers should carry out. The Standards are recommended by the National Vaccine Advisory Committee and endorsed by the American Academy of Pediatrics. Implementation of the Standards is designed to remove barriers that (1) impede vaccine delivery and (2) eliminate missed immunization opportunities at office visits. For example, the Standards emphasize use of simultaneous vaccination with multiple vaccines to avoid extra visits and that parents be given immunization cards to help them and providers know their child's immunization needs.
- CDC will strengthen involvement of private health care providers through improved communication and collaboration to obtain their input and support for the CII goals.
- CDC will award additional grant funds to States to help establish Statewide Immunization Information Systems to remind parents when vaccinations are due for their children.

# Action II

## Reduce Vaccine Costs for Parents

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### Challenges

- Vaccine costs have risen substantially in recent years, to about \$280 per child.
- Parents have increasingly been referred by private providers to public health clinics where Federal or State supplied vaccines are free. This referral breaks a child's continuity of care and resulting in missed immunizations.
- Many States invest substantial funds in vaccine purchase, especially through their Medicaid program, thus limiting spending on improved immunization infrastructure.

### Solutions

- The Vaccines for Children (VFC) program will provide free vaccine to about 60 percent of our Nation's children, starting in October 1994, by purchasing over \$400 million in vaccines.
  - Parents of eligible children can obtain vaccinations from their provider of choice, thus allowing continuity of care
  - Eligible children include those who are Medicaid eligible, those without any health insurance, and American Indians. Children served by Federally Qualified Health Centers (FQHC) and Rural Health Clinics can receive VFC vaccines if their health insurance does not cover immunization.
  - States can buy vaccines at significantly reduced Federal prices to allow expanded access to vaccine for children in these States. About one-half of the States are considering supplying vaccine to all their children.
- The attached schematic diagram generally outlines the proposed VFC distribution process.
- Federal immunization grant funds and State funds will continue to help meet the needs of children not eligible for the VFC.

## **Action III**

# **Increase Community Participation, Education, and Partnerships**

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### **Challenges**

- Parental Awareness - while parents are aware immunizations are needed by school age, they are often unaware that 80% of vaccinations are required by 2 years of age (need to change social norm).
- Providers, sometimes not aware of the urgency and importance of age appropriate immunization, often do not use all opportunities to immunize children in their care.
- Need to improve coordination among the many public and private sector groups working at State and community levels to educate and motivate parents/providers (i.e., groups in Harlem unaware of each other) and increase understanding of community organizing methods (i.e., how to recruit/direct volunteers, develop plan/strategy to use and coordinate diverse organizations, how to use media).
- Need to access the good will and provide opportunities for the many organizations that are not involved but desire to participate in immunization related activities.

### **Solutions**

- An aggressive community participation, education and partnership program is a fundamental component of the CII. This component seeks to increase awareness of the importance of age-appropriate immunization and increase community participation in the effort to educate and mobilize parents and providers.
- CDC is working with State health departments and community-based groups to build or enhance capacity to establish or expand coalitions, including:
  - recruiting/hiring Outreach Coordinators in each HHS region to work with States and community-based groups.
  - convening regional meetings for each HHS region to enhance coordination and communication among States, community-based groups, and others.
- CDC is reaching out to a cross-section of national organizations, groups, and corporations to seek their involvement within coalitions at the State and local levels.
- CDC is providing other tools and taking additional action to expand awareness and educate parents and providers:
  - Produced public service announcements, based on extensive collaboration and focus group research, for TV, radio, print and other media in English and Spanish languages;
  - Established toll-free phone numbers that will provide information in English and Spanish, and will also refer parents to local health clinics, and;
  - Reached out to the business and entertainment community, such as Gerber, McDonalds, Childrens Television Workshop, and Hollywood, to encourage their promotion and marketing of immunization messages.
- CDC is committed to establishing a long-term program that will ensure sustained support for these activities.

## **Action IV**

# **Improve Monitoring of Disease and Vaccination Coverage**

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### **Challenges**

- Epidemics begin in populations with low immunization rates. Quickly finding pockets of low immunization rates or disease allows targeting of efforts to high risk populations.
- Information on immunization coverage at the National, State, and local levels is essential for (1) evaluating program effectiveness, (2) identifying populations at high risk for underimmunization, and (3) targeting remedial action.
- No national immunization coverage data were available between 1986 and 1990.
- No standardized system to collect immunization coverage information at the State and local levels has been available.
- Cases of disease need to be rapidly detected to identify underimmunized populations and to institute control efforts.
- Surveillance systems to detect disease often have been inadequate to prevent those cases from leading to epidemics.

### **Solutions**

- CDC is providing grant funding, for the first time, and scientific/intervention assistance to public health agencies to address surveillance weaknesses. This effort will include the investigation of each case of vaccine-preventable disease targeted for elimination.
- As a result of increased CII funding in 1994, comprehensive systems to monitor immunization coverage are functioning, or are being developed by CDC, to provide local, State, and National data to help target interventions.
  - The National Health Interview Survey (NHIS) monitors immunization levels nationwide on a quarterly basis
  - State and local area immunization levels will be assessed on a quarterly basis through random-digit-dialing surveys in all 50 States and in 28 large urban areas.
  - Clinic assessments assist public and private providers to measure immunization levels in populations they serve.
- This systematic evaluation of the outcome of Federal and State programs toward reaching disease and coverage targets addresses an essential component of the CII, which is to generate data to focus accountability for program results.

# Action V

## Improve Vaccines and Vaccine Use

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### Challenges

- Currently, children require about 11-15 separate immunizations prior to their second birthday. This large number makes it more difficult to obtain complete immunization on time.
- Because of dissemination of inaccurate information, some parents have become more fearful of immunizations than the diseases themselves. Such unfounded fears can reduce coverage.
- Providers can be confused by multiple immunization schedules.

### Solutions

- The Advisory Committee on Immunization Practices, the American Academy of Pediatrics, and the American Academy of Family Physicians are working together to develop a single childhood immunization schedule.
- The Public Health Service (NIH, FDA, and CDC) will work with manufacturers and researchers to stimulate development of new and combined vaccines to reduce the number of immunizations.
- Although available vaccines are very safe and effective, CDC will work with States and selected provider institutions to enhance systems to detect rare adverse events following vaccination. This will provide better information to parents on the risks and benefits of vaccination.

**Attachment**

**Childhood Immunization Initiative  
Vaccination Coverage for 1992\* 1993\*<sup>§</sup> and Vaccine  
Coverage Goals for 1996 and 2000<sup>¶</sup>**

Vaccine	1992	1993	1996	2000
DTP 3+	83	87	90	90
OPV 3	72	78	90	90
MMR	83	81	90	90
Hib 3+	—	50	90	90
Hep B 3	—	13	70	90
DTP 4	59	71		90
DTP 4, OPV 3, MMR, Hib 3+, and Hep B 3**	55	65		90

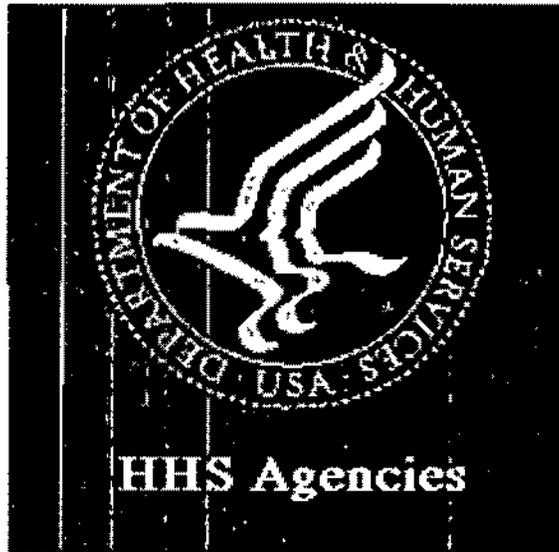
\* Coverage for children 19-35 months of age.

<sup>§</sup> Provisional data based on 1st and 2nd quarters.

<sup>¶</sup> Healthy People 2000 goals have not changed.

\*\* 1992 and 1993 data are only for DTP4, OPV 3, and MMR

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**Department of Health and Human Services**

**Y2K Lessons Learned**

## EXECUTIVE SUMMARY

The Year 2000 (Y2K) threat was a unique experience for the Information Technology (IT) community. Never before had a major project, which affected all aspects of HHS, as well as other Agencies, been undertaken with an immovable deadline. Failure could have resulted in significant disruptions to HHS systems and those of its health care and human services partners. It could have also affected HHS's ability to carry out its mission and resulted in reduced public access to health care and human services. To mitigate this risk, HHS and its Operating Divisions (OPDIVs) devoted time, money, and resources to perform the remediation of existing systems and to prepare for continued operations in case of failure. The need to provide "command and control" capability on Day One imposed requirements that are usually met in a military environment or a 24X7 operations center, but had not commonly been provided across HHS. HHS succeeded due to the quick learning, conscientious planning and efforts of its Headquarters and OPDIV IT staffs. It also depended on the support and the cooperation of HHS and OPDIV upper management. HHS's Day One activities went as planned, and no significant Y2K problems were encountered.

During the Y2K challenge, HHS and its OPDIVs were actively engaged in the following activities:

- funding, staffing, and resource planning and contracting
- reporting
- awareness within HHS
- establishment of business partner relations
- outreach programs
- code assessment
- asset identification
- equipment replacement
- remediation
- testing
- independent verification and validation (IV&V)
- recertification
- implementation
- moratoriums
- continuity and contingency planning
- Day One Center preparation, including planning and procedure testing and training
- Day One operations
- Continuity through Day Sixty
- Wrap up and lessons learned

HHS provides oversight for a number of Federally funded, State-run and grantee-run programs. Attempting to ensure program-wide Y2K compliance by working with hundreds of State and grantee agencies and over one million health care providers and their provider associations presented an enormous management challenge. OPDIVs conducted many outreach activities as participants in the Health Care and Human Services Outreach Sectors. Outreach activities to provide Y2K information and assistance included providing conferences, workshops, on-site assessments, technical assistance funding, web sites, various informational mailings, and a Y2K hotline. On Day One, HHS was responsible for reporting the overall status of the health care sector based on inputs from these diverse business partners.

Since Day One, the Department, and each of its OPDIVs, have looked back on the Y2K Project and identified lessons learned, long-term benefits, and recommendations for future actions. This report represents a synthesis of these findings and recommendations, capturing them so that they may be acted upon and applied to future efforts. Many of these lessons are directly applicable to HHS's project to implement Critical Infrastructure Protection (CIP) and IT planning efforts in general.

Many of the key lessons learned were common across OPDIVs and HHS, including:

- obtain the support and backing of upper management
- develop budgets and secure funding early in the process
- encourage coordination and communication
- define and understand the scope of the project
- institute project management for IT programs
- develop, implement, and enforce change control and configuration management
- focus oversight on critical aspects of the program
- rigorously test IT plans and systems
- adopt and implement uniform and established methodologies
- use independent testing and auditing for quality assurance
- assign personnel with the necessary skills and talents

The Y2K Project has provided many lasting benefits. HHS built an effective Y2K management organization. Awareness activities forged stronger alliances between HHS IT organizations and program staff and built a greater appreciation of the value of IT within the organization. With the increased visibility, IT organizations have become an integral part of the HHS organization. As Y2K approached, HHS IT organizations took on the responsibility for preparing the entire enterprise for a contingency by developing plans for the continuity of core business processes. The understanding that developed within the IT community of HHS's business, and the role that IT plays in support of core processes, can be a springboard for better IT planning.

While the focus on Y2K has taken attention away from other IT projects, the investments made to prepare for Y2K have resulted in dramatic, long-term improvements to HHS's systems. HHS has leveraged the technology improvements implemented by the Y2K program to be better prepared for the future. Obsolete applications have been retired. Current applications are properly documented, tested, and have current contingency plans. These improvements mean that HHS can focus on more challenging problems with an infrastructure that is based on current technology.

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## SECTION I

### INTRODUCTION

#### 1.1 OBJECTIVE

The objective of this report is to summarize results and provide lessons learned for overall Department of Health and Human Services (HHS) efforts in addressing the Year 2000 (Y2K) problem. This report addresses the following:

- remediation efforts
- risks
- summary of Y2K efforts
- key lessons learned, including recommendations
- long term benefits

Each Operating Division (OPDIV) prepared a specific report its activities and lessons learned for the Y2K Project. The material contained in these OPDIV-specific reports has been summarized and included in this report along with HHS-wide information.

#### 1.2 IMPACT OF THE Y2K PROJECT

Government Information Technology (IT) management has undergone radical changes since the Clinger-Cohen Act of 1996 was passed. Government IT organizations have evolved from being procurement-focused under the Brooks Act of 1965 to focusing on how effectively the organization uses IT. In general, HHS IT organizations were in the beginning stages of this process at the point that Y2K became an urgent issue. The Y2K effort was the first opportunity for these new IT organizations to make an impact on HHS.

The challenges faced by HHS and other government organizations in dealing with the Y2K threat were a unique experience for the IT community. Never before had a major project, which affected all aspects of HHS, been undertaken with an immovable deadline. Y2K could have had major consequences for HHS's systems and those of its health care business partners, and could have disrupted access to health care. The need to prepare for the continuation of mission-critical business processes in the event of systems failure has required IT-dependent organizations like HHS to extend their scope far beyond technology development and operations. Program management needed to understand how IT was integral to HHS's business operations and to develop Business Continuity and Contingency Plans (BCCP) in case of wide spread Y2K failures. HHS had to develop a strategy not only to make its business partners aware of the potential Y2K problem but also to offer technical assistance to minimize potential Y2K risks. The need to provide "command and control" capability on Day One imposed requirements that are usually met in a military environment

or a 24X7 operations center, but had not been provided throughout HHS. The important lesson is that HHS succeeded regardless of the difficulty, due to upper management support and the quick learning, conscientious planning, and efforts of its staff. HHS's Day One activities went as planned and no significant Y2K problems have been encountered.

The focus during the last two years on Y2K has been a catalyst in the maturation of IT organizations within HHS. With management support and budget focused on Y2K, an effective Y2K management organization was built within HHS that included participation from each OPDIV. Awareness activities forged stronger alliances between HHS IT organizations and program staff and built a greater appreciation for the value of IT within the organization. With the increased visibility, IT organizations have become an integral part of the HHS organization. As Y2K approached, HHS IT organizations took the responsibility for preparing the entire HHS organization for any contingency and developing plans for continuity of core business processes. The deeper understanding that has developed within IT of HHS's business and the role that IT plays in support of core processes can be a springboard for better IT planning.

While the focus on Y2K has taken attention away from other IT projects, the investments made to prepare for Y2K have resulted in a dramatic, long-term improvements to HHS's systems. HHS has leveraged the technology improvements implemented by the Y2K program to be better prepared for the future. Obsolete applications have been retired. Applications are now properly documented, tested, and have current contingency plans. These improvements mean that HHS can focus more on challenging problems with an infrastructure that is based on current technology.

Because of the attention focused on Y2K at the highest levels of government, many schedule and reporting requirements were levied on HHS. Over the months, direct communication links were forged between the Department's Senior Management, the Chief Information Officers (CIO's), and the Y2K coordinators at both the OPDIV and Department level. These links were key to meeting ambitious schedules - the schedules would never have been met if old chains of command and communication had been relied on. Because of the Y2K coordination meetings, OPDIVs now have a better understanding of how their mission fits with the mission of HHS. Each OPDIV also has a better understanding of the critical systems of the other OPDIVs. There is a much stronger relationship between many of the IT organizations within HHS. These relationships can be used to implement Presidential Decision Directive 63 (PDD-63) and Clinger-Cohen Act requirements more effectively. This new way of doing business relies on teamwork, flexibility, and communication and represents real progress towards an integrated IT organization at all levels within HHS.

For external work with health care partners, States, and other grantees, the project management challenge was greater. HHS provides oversight for a number of Federally funded, State-run or grantee-run programs. Attempting to ensure program-wide Y2K

compliance by working with hundreds of State and grantee agencies and over one million health care providers and their provider associations presented an enormous challenge. On Day One, HHS was responsible for reporting the overall status on the Health Care Sector based on inputs from these diverse business partners. HHS OPDIVs conducted many outreach activities as part of the Health Care and Human Services Outreach Sectors. Outreach activities to provide Y2K information and assistance included conferences, workshops, on-site assessments, technical assistance funding, web sites, various informational mailings, and hotlines.

### **1.3 SUMMARY OF Y2K REMEDIATION EFFORTS**

With the onset of the new millennium, each Federal agency designed, developed, and implemented plans to ensure that its information systems were Y2K compliant. In addition, each Federal agency developed a mechanism for reporting to the President's Council on Year 2000 Conversion Information Coordination Center (ICC) on the readiness of the Federal Government and its Business Partners to continue to deliver services at the millennium change over without disruption. Federal agencies spent time, money, and resources to perform the remediation of existing systems and to design, develop, and implement centers to capture and report the use of their mission critical systems, business partners/high impact reporting, building infrastructure, and related public sector information. Table 1-1 summarizes the scope of remediation efforts across HHS.

**Table 1-1. Remediation Efforts**

OPDIV	Total Remediated Y2K Components					
	Critical Systems	Non-Critical Systems	Data Exchange	Telecomm Equipment	Facilities	Embedded Systems
ACF	45	17	270	205		1
AHRQ	0	1		46		
AOA	2	5		21		
CDC	63	136	381	162	213	1,009
FDA	34	234	1	1,956	76	1,666
HCFA - Internal	25	56	3,209	40		2
HCFA - External	75	5	142,015			
HRSA	5	9		124		
HHS	5	3	10	621	3,165	22,613
NIH	14	349	61	2,610	271	929
DIG	3	3		5		
OS	0	45		145	1	
PSC	8	17	104	181	3	
SAMHSA	5	10		109		
Total	284	890	146,501	6,225	3,729	26,220

Each OPDIV participated in the remediation process of systems and the reporting of status of their mission critical systems, business partners/high impact reporting, building infrastructure, and related public sector information as part of the Day One activities. Overall, HHS followed a set of steps starting from the identification process of assets through the lessons learned review, as follows:

- participating in the President's Council on Year 2000 Conversion, especially as lead for Health Care and Human Services Outreach Sectors
- conducting awareness activities with HHS IT organizations and program personnel
- recognizing the importance of securing senior program management and senior management support as early in the process as possible
- developing a comprehensive inventory of systems, facilities, and devices
- assessing the Y2K compliance state of each system or device

- performing risk assessment
- identifying critical systems
- developing an action plan for each noncompliant system or device
- acquiring or developing replacements or remediating noncompliant systems or devices
- thoroughly testing each repaired system
- conducting IV&V testing
- implementing Y2K compliant systems and device
- monitoring systems
- instituting outreach efforts to health care providers
- coordinating information flows with the international Health Care Sector (e.g. China)
- conducting surveys and assessments of State-run, Federally-funded programs and public health agencies on their Y2K readiness
- identifying core business processes and developing continuity plans to ensure that they could proceed in the event of system failures
- developing a comprehensive contingency and disaster recovery plan to ensure continuity of operations
- developing an extensive Day One plan to test, monitor, fix if necessary, and report on critical systems, infrastructure, high impact programs during the actual millennium transition
- operating a Day One Command Center round-the-clock to collect, triage, and provide real-time information on each agency's Y2K status, summarized at the HHS level and reported to the ICC

## 1.4 RISK ASSESSMENT

HHS addressed three primary sources of Y2K risk: internal systems failure, Health Care Sector failure, and national infrastructure failure. HHS's primary responsibility was to ensure that no internal systems failures resulted in a disruption of service to the public. Through outreach activities HHS took on an added burden for ensuring that Health Care Sector partners that relied on Federal funding were ready for Y2K. Finally, as the Y2K deadline approached, HHS OPDIVs assessed the impact of national infrastructure failure on core business processes and developed continuity plans for potential failure scenarios.

While all of HHS's OPDIVs performed Y2K-related risk assessments, those with major IT investments, Centers for Disease Control and Prevention, (CDC), Food and Drug Administration (FDA), Health Care Financing Administration (HCFA), and Program Support Center (PSC) performed major risk analyses as part of the Y2K assessment phase. Specific criteria used for risk assessment included public health and safety, agency image/reputation/public trust, financial, operations criticality, policy information, management information, and facilities/property management. An overlay to these criteria is the time criticality of a potential system disruption, i.e., system processes operating in real-time face a higher degree of impact than systems supporting processes that deal with long-term issues and trends. Each OPDIV ranked its systems according to the criteria and a scoring methodology. Each risk was identified, assessed for likelihood of occurrence, assessed for its impact on schedule goal attainment, and ranked accordingly. The results of these risk assessments formed the basis of each OPDIVs approach to the remediation of vulnerable systems and development of BCCPs and Day One Plans.

The threat of disruption due to Y2K errors within HHS systems was a very real threat. As each system was assessed and tested, a number of date-related problems surfaced ranging from minor to moderate. Each of these problems was resolved, retested, and all systems subsequently were certified Y2K compliant, well before January 1, 2000. Specific Y2K testing had been performed and subjected to independent validation and verification (IV&V), making undiscovered Y2K errors unlikely. By January 1, 2000, most systems had already been in normal use long enough to shake out any non-Y2K problems introduced by Y2K fixes. Had HHS not prepared for the Y2K rollover by testing all systems before the event, these problems would not have been corrected and would have had a noticeable negative impact on the continuity of business operations.

Risk assessments identified several systems and facilities that would have had immediate public impacts in case of a Y2K failure. These systems were singled out for special attention during the Day One period. Substantive contingency plans were developed and tested. The critical capabilities that would have resulted in the widest impact included:

Centers for Disease Control and Prevention

- Epidemiological systems
- Vaccines for Children Data System
- Tuskegee Health Benefits Program
- TOPS Financial Accounting System
- Pulsenet National Molecular Subtyping Network for Foodborne Disease Surveillance
- Public Health Laboratory Information Systems
- Vaccine Adverse Event Reporting System

#### Health Care Financing Administration

- Medicare
- Medicaid

#### Health Resources and Services Administration

- Organ Procurement and Transplant Network (OPTN)
- National Marrow Donor Program (NMDP)

#### Indian Health Service

- Network of distributed health care facilities, including the Resource and Patient Management System (a distributed health information system) and medical devices

#### National Institutes of Health

- Research facilities and Clinical Center

The potential negative effects of not being Y2K ready could have included the following (affected agency is in parentheses):

- inability to enroll entitled individuals and make payments to Managed Care Organization (HCFA)
- delays in Medicare payments to health care providers, disrupting cash flow, and eventually impacting their ability to provide services (HCFA)
- errors in payment services putting Federal funds at risk (HCFA)
- Medicare and Medicaid beneficiaries could have experienced difficulties in establishing eligibility status due to health care providers' inability to verify their eligibility (HCFA)
- inability to provide public health services (CDC)

- compromised patient care (NIH, HCFA, IHS, HRSA)
- inability to enforce child support orders (Child Support Enforcement – CSE) and identify delinquent non-custodial parents (ACF)
- compromised patient and animal safety at NIH facilities (NIH)
- impact to organ transplant allocations and inability to locate bone marrow donors (HRSA)

A common core business process at HHS is the administration of health care related grants. HHS was prepared to respond to problems with grants administration and payment systems by shifting to manual operations. Manual operations would have allowed grant award and payment activities to proceed with minimal impact on grantees. Failure scenarios for grant information systems addressed possible failures in HHS accounting systems, Treasury systems, State systems, and bank systems. In the worst case, grant payments might have been delayed, preventing grantees from delivering services due to a lack of funding. Failures of grant information systems would have had major impacts to managing, analyzing, and reporting performance data. Moreover, Y2K-related corruption of grant tracking data might have had negative consequences for HHS and for grantees.

In the initial assessment of HHS administrative systems and infrastructure, it was clear that outmoded hardware and software, cabling, telecommunications, and security systems endangered the agency's ability to continue functioning after the millennium rollover. All HHS mission-critical administrative systems were remedied, tested, and continuity and contingency plans were put in place and tested. Non-compliant hardware, system software, and applications were replaced. Consequently, Day One risk was low for HHS internal systems.

The primary risks associated with the failure of external infrastructure included communications failures, utility failures, and security intrusions. Continuity plans addressed communications and utilities failures when practical. According to the President's Council on Year 2000 Conversion, the likelihood of communication and utilities failures was low and extensive or costly contingencies were not planned for these types of failures. The likelihood of security problems appeared to increase as January 1 approached. HHS increased preparations for possible security events in November and December 1999, and response teams were available throughout HHS.

HHS assessed the risk of many of its business partners, especially grant recipients and Medicare providers, through telephone and written surveys and site assessments. In general, HHS business partners are independent health care organizations that are often funded from many sources. HHS could not dictate or direct the Y2K preparations of these organizations, making assurance that they were ready for Y2K difficult. Survey results indicated that most business partners were ready for Y2K by late 1999. Failure of HHS's business partner systems could have resulted in delays in processing Medicare claims and making payments to

Medicare providers, an delays in billing Medicare and other payers, disrupting cash flow, and eventually impacting their ability to provide services.

## SECTION 2

### DATA ANALYSIS FOR LESSONS LEARNED

#### 2.1 METHODOLOGY

HHS developed a methodology to ensure systematic data analysis as a basis for determining lessons learned. These lessons learned were not limited only to remediation efforts. HHS used eight general phases, and associated activities, to initially categorize data received from the OPDIVs. The remaining information was derived by combining the individual OPDIV report details into a "high-level" view that represents a consensus or near consensus view. The associated lessons learned or recommendations are presented in later sections of this document.

#### 2.2 SUMMARY OF Y2K RESULTS

Table 2-1 contains a summary of the Y2K results in the individual OPDIV reports. The phase and activities column entries were taken directly from the original report template provided to the OPDIVs by the Department.

The column definitions are:

- Phase: General category of activities, including Management, Awareness, Assessment, Remediation, Validation, Implementation, Risk Planning, and Day One
- Activities: Main activities performed in a given phase
- Primary Approaches: High level steps or processes taken to perform an activity
- Results: End result of performing the activity; effectiveness of approach
- Issues: Reported problems or difficulties and their impact on performing the activity; unexpected results or occurrences that should be noted
- Long Term Benefits: Tangible products, processes, or concepts that have future benefits (Recommendations or lessons learned relating to these items are presented later.)

When deemed important for conveying an adequate understanding of the data, individual OPDIVs were identified.

**Table 2-1. Summary of Y2K Results**

Phase	Activities	Primary Approaches	Results	Issues	Long Term Benefits (product, process, concept)
<b>Management</b>	Funding, Staffing, Resource Planning	<ul style="list-style-type: none"> <li>• Establish "buy-in" from upper level management</li> <li>• Quantify funding needed; identify sources; obtain funding</li> <li>• Establish a Y2K task force with a top level coordinator and sub-coordinators by each OPDIV, as necessary</li> <li>• Identify scope of problem and staffing needs; allocate resources; use cost-efficient contractors when appropriate</li> <li>• Develop overall Y2K management plan and project schedule</li> </ul>	<ul style="list-style-type: none"> <li>• No critical Y2K problems encountered; continuity of business functions preserved</li> <li>• In general, project schedules were kept on track</li> </ul>	<ul style="list-style-type: none"> <li>• Direction and guidelines from OMB,GAO, Congress, and HHS need to be timely and clearly defined</li> <li>• Inadequate or incomplete planning caused various problems (requirements creep, staffing allocation, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Established framework for communication between and among OPDIVs, partners, and other agencies</li> <li>• The successful approach using a task force with single can be applied for other projects</li> <li>• Improved methodologies for project planning and risk management</li> </ul>

Phase	Activities	Primary Approaches	Results	Issues	Long Term Benefits (product, process, concept)
Management	Reporting	<ul style="list-style-type: none"> <li>Standard monthly reporting within the OPDIVs, with ad hoc reporting as required. Quarterly reporting to OMB, GAO and Congress</li> </ul>	<ul style="list-style-type: none"> <li>Periodic reporting assisted in keeping projects on schedule</li> </ul>	<ul style="list-style-type: none"> <li>“Standardized, across-the-board” reporting guidelines and metrics not always appropriate for individual projects and had some negative impact (e.g., too much reporting); need ability to customize reporting requirements</li> <li>Addressing changed or new requirements on short notice</li> <li>Excessive ad hoc requests for information</li> </ul>	<ul style="list-style-type: none"> <li>A well conceived, standardized reporting method that facilitates accurate top-level project management</li> <li>Improved sharing of information between organizations</li> </ul>
Management	Wrap Up Lessons Learned	<ul style="list-style-type: none"> <li>Analyze results and issue a lessons learned report</li> </ul>	<ul style="list-style-type: none"> <li>Each OPDIV issued a final report (varying degrees of detail); a consolidated summary report was also produced</li> </ul>	<ul style="list-style-type: none"> <li>Not all OPDIVs adhered to the document template, making the rollup more difficult</li> </ul>	<ul style="list-style-type: none"> <li>Documented Y2K results plus lessons learned that can be applied to future projects</li> </ul>

Phase	Activities	Primary Approaches	Results	Issues	Long Term Benefits (product, process, concept)
Awareness	Awareness Within Agency	<ul style="list-style-type: none"> <li>• Develop an overall awareness plan and identify a team to implement it</li> <li>• Distribute information via email, the web, or other media (e.g., posters, videos)</li> <li>• Promulgate Y2K messages from the Deputy Secretary to all HHS employees.</li> <li>• Some OPDIVs held a Y2K Awareness Day</li> <li>• Held frequent management and technical meetings by team in proactive efforts</li> <li>• Establish CIO Y2K Web Site</li> </ul>	<ul style="list-style-type: none"> <li>• All stakeholders were well informed on Y2K issues</li> </ul>	<ul style="list-style-type: none"> <li>• No major problems, a few instances of getting staff to take "ownership" of the problem</li> <li>• Distributing material electronically may require users to proactively access it and/or have knowledge of its existence</li> </ul>	<ul style="list-style-type: none"> <li>• Improved awareness of general IT issues (e.g., security)</li> </ul>
Awareness	Establish Partner Relationships	<ul style="list-style-type: none"> <li>• OPDIV task forces established points of contact with partners</li> <li>• Creation of joint private and Federal Health Care and Human Services Outreach Sectors</li> <li>• Deputy Secretary held meetings with Health Care CEOs</li> </ul>	<ul style="list-style-type: none"> <li>• Partner relationships and contacts were established</li> </ul>	<ul style="list-style-type: none"> <li>• No significant issues</li> </ul>	<ul style="list-style-type: none"> <li>• New business relationships formed, existing relationships strengthened</li> </ul>

Phase	Activities	Primary Approaches	Results	Issues	Long Term Benefits (product, process, concept)
Awareness	Outreach to Partners	<ul style="list-style-type: none"> <li>• Tailor outreach programs</li> <li>• Distribute information via email, the web, or other media (e.g., posters, videos, targeted mailings)</li> <li>• Conduct assessments and surveys of affected industries (e.g., FDA and the pharmaceutical industry)</li> <li>• Held Y2K Awareness Days</li> <li>• Participate in multi-organizational working groups and conferences</li> <li>• Survey partners for related issues</li> <li>• Assist partners on their own Y2K compliance planning</li> <li>• Coordinate with National Governors Association and National Association of State Information Resources Executives (NASIRE)</li> <li>• Human Service Sector (representatives from HRSA, HCFA, SAMHSA, AoA, ACF) produced a sector outreach plan providing Y2K information to all levels of human service providers</li> <li>• Health Care Sector did the same.</li> </ul>	<ul style="list-style-type: none"> <li>• Partners were kept well informed on Y2K issues</li> <li>• Partner Y2K compliance progress tracked</li> </ul>	<ul style="list-style-type: none"> <li>• Most OPDIVs had no issues</li> <li>• IHS - Field locations, particularly Tribe managed, did not fully comprehend the impact of Y2K and HIS had to place a lot of their resources on the awareness effort</li> <li>• HRSA - Partners only partially funded through HRSA and responding to the Y2K surveys was not a high priority. Distribution problems for surveys - contact info not current.</li> </ul>	<ul style="list-style-type: none"> <li>• Outreach program "template" that could be tailored for other large projects</li> <li>• Accurate partner contact information databases</li> <li>• Better understanding of how partners view and implement "national" projects of this type</li> </ul>

Phase	Activities	Primary Approaches	Results	Issues	Long Term Benefits (product, process, concept)
Assessment	Code Assessment	<ul style="list-style-type: none"> <li>• Direct inspection or testing of code using software tools</li> <li>• Use manufacturers' product information to assess COTS software</li> <li>• Develop a remediation plan</li> </ul>	<ul style="list-style-type: none"> <li>• All in-house code assessed</li> <li>• Potential interface problems with external programs and data exchanges identified</li> <li>• Remediation plans developed</li> </ul>	<ul style="list-style-type: none"> <li>• Developed Security Plans, identified and addressed known deficiencies.</li> <li>• Some vendors did not update their products for Y2K compliance until late in 1999.</li> </ul>	<ul style="list-style-type: none"> <li>• Security concerns identified</li> </ul>
Assessment	Asset Identification	<ul style="list-style-type: none"> <li>• Use both manual (e.g., surveys, direct inspection) and automated tools to inventory all hardware, and software, and facilities</li> <li>• Categorize assets (mission critical, normal, low priority, etc.)</li> <li>• Develop a remediation plan</li> </ul>	<ul style="list-style-type: none"> <li>• Accurate inventory of existing hardware and software</li> <li>• Redundant or unneeded systems were identified and retired</li> </ul>	<ul style="list-style-type: none"> <li>• Security vulnerabilities discovered in some OPDIVs</li> <li>• Categorization of systems was not coordinated with categorization of business processes, resulting in some initial errors in categorizing assets that had to be corrected later</li> </ul>	<ul style="list-style-type: none"> <li>• Accurate inventory of existing hardware and software</li> <li>• Proven data collection methods to support configuration management of assets</li> </ul>

Phase	Activities	Primary Approaches	Results	Issues	Long Term Benefits (product, process, concept)
Remediation	Software Remediation	<ul style="list-style-type: none"> <li>• Develop "windowing" software to convert externally received data to Y2K compliant</li> <li>• Use standard software tools to correct code</li> <li>• Develop replacement systems that are Y2K compliant</li> <li>• Use vendor supplied patches</li> <li>• Exchange information (user groups, published standards or guidelines, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Large numbers of applications and systems were successfully remediated on schedule</li> </ul>	<ul style="list-style-type: none"> <li>• Vendor information not always timely: OSCE (ACF) had to change from repair to replacement midway through due to an AT&amp;T transfer protocol change</li> <li>• COTS remediation required vigilance (and resources) due to frequent vendor patch releases</li> <li>• Not using standard software development processes lengthened those particular remediations</li> </ul>	<ul style="list-style-type: none"> <li>• Beneficial system upgrades that may not have been performed otherwise</li> <li>• Increased knowledge of system functionality and interfaces</li> <li>• Improved network security</li> </ul>

Phase	Activities	Primary Approaches	Results	Issues	Long Term Benefits (product, process, concept)
<b>Remediation</b>	Equipment Replacement Planning	<ul style="list-style-type: none"> <li>• Examine or test (using industry standard methods) equipment for Y2K compliance</li> <li>• Upgrade or replace equipment; each OPDIV had its own strategy for doing this</li> <li>• Develop an overall plan and schedule to manage remediation since it was an extensive undertaking</li> <li>• Use contractors to do the work</li> </ul>	<ul style="list-style-type: none"> <li>• Equipment successfully upgraded or replaced; for some OPDIVs this was upwards of 5000 items</li> <li>• Some noncompliant, noncritical items not replaced</li> </ul>	<ul style="list-style-type: none"> <li>• OMB changed deadlines and requirements midway through the process caused additional planning and reallocation of resources</li> </ul>	<ul style="list-style-type: none"> <li>• Upgraded, compliant equipment</li> </ul>
<b>Validation</b>	Testing	<ul style="list-style-type: none"> <li>• Develop a test plan and identify test software (a variety of COTS packages were used)</li> <li>• Use contractors to conduct the tests</li> <li>• Create or simulate the test environment and conduct test</li> </ul>	<ul style="list-style-type: none"> <li>• All testing was successfully completed</li> </ul>	<ul style="list-style-type: none"> <li>• PSC was required to perform an end-to-end system test without direct authority over all systems in the process, which may have resulted in unreported problems.</li> <li>• A few difficulties with being able to advance the date within the system operating environment</li> </ul>	<ul style="list-style-type: none"> <li>• Documented procedures for planning and executing large scale tests</li> <li>• Increased awareness of the importance of configuration management and quality assurance, improved CM and QA procedures</li> </ul>

Phase	Activities	Primary Approaches	Results	Issues	Long Term Benefits (product, process, concept)
Validation	IV&V	<ul style="list-style-type: none"> <li>Select appropriate IV&amp;V contractor (nearly all IV&amp;V was contracted out)</li> <li>Plan and execute tests, report results</li> </ul>	<ul style="list-style-type: none"> <li>All IV&amp;V work was performed on schedule</li> </ul>	<ul style="list-style-type: none"> <li>A few OPDIVs reported start-up difficulties (coordination with contractors) but work was finished on schedule</li> <li>FDA reported some difficulties with system owners providing results in non-standard formats or not being present at tests</li> </ul>	<ul style="list-style-type: none"> <li>An established IV&amp;V process that can be used for other aspects of IT</li> <li>Better system documentation (a result of needing it for the IV&amp;V process but it should normally be done during system development)</li> </ul>
Validation	Recertification	<ul style="list-style-type: none"> <li>Primarily performed by contractor</li> <li>Develop and execute test plan for certification</li> </ul>	<ul style="list-style-type: none"> <li>All systems recertified on schedule</li> </ul>	<ul style="list-style-type: none"> <li>Approving system changes needed to meet program requirements after IV&amp;V and recertification</li> <li>Needed a better understanding of change control after certification (PSC)</li> <li>Preventing system owners from making unauthorized changes to certified systems</li> </ul>	<ul style="list-style-type: none"> <li>Upgraded, compliant systems and a baseline configuration database</li> <li>Improved web version of OPTN available ahead of nominal schedule</li> <li>Using a controlled system development process, with upfront planning, reduces later work effort</li> </ul>

Phase	Activities	Primary Approaches	Results	Issues	Long Term Benefits (product, process, concept)
Implementation	Implementation	<ul style="list-style-type: none"> <li>• Establish an implementation plan and schedule</li> <li>• Incorporate change management to incorporate plan flexibility and insure requirements stay satisfied</li> </ul>	<ul style="list-style-type: none"> <li>• Implementation generally successful</li> <li>• New working groups and partnerships facilitated planning, scheduling equipment installations, and general sharing of information</li> </ul>	<ul style="list-style-type: none"> <li>• Having a "hard" deadline forced some early decisions based on preliminary or incomplete information</li> <li>• Change control after implementation remains important</li> </ul>	<ul style="list-style-type: none"> <li>• Experience in coordinating large scale projects of this type</li> <li>• Increased standardization of systems within each OPDIV and to a lesser extent across OPDIVs</li> </ul>
Implementation	Moratoriums	<ul style="list-style-type: none"> <li>• Develop (or follow existing) moratorium guidelines and waiver request procedures</li> <li>• Evaluate and monitor implemented waiver requests</li> </ul>	<ul style="list-style-type: none"> <li>• Selected waivers were granted by the Department, not all OPDIVs requested waivers</li> <li>• Moratorium facilitated overall Y2K compliance and readiness</li> </ul>	<ul style="list-style-type: none"> <li>• Moratoriums delayed new system functionality, must apply judiciously</li> </ul>	<ul style="list-style-type: none"> <li>• Classification of mission critical vs. essential vs. non-critical systems</li> </ul>

Phase	Activities	Primary Approaches	Results	Issues	Long Term Benefits (product, process, concept)
Risk Planning	Continuity Planning	<ul style="list-style-type: none"> <li>• Use GAO continuity planning guidelines as a starting point for planning</li> <li>• Develop an OPDIV-customized BCCP</li> <li>• Identify failure scenarios</li> <li>• Analyze processes, conduct interviews, identify critical functions</li> <li>• Implement plan and provide necessary training to staff</li> </ul>	<ul style="list-style-type: none"> <li>• Business processes were evaluated and ranked, from "mission critical" to essential to non-critical</li> <li>• BCCPs were updated or created to reflect the analysis results</li> <li>• Training provided</li> <li>• Most OPDIVs performed some type of business process continuity testing</li> </ul>	<ul style="list-style-type: none"> <li>• IHS did not receive plan reports from most Tribally managed programs and could not report on their status</li> <li>• ACF - Oversight agencies shifted focus from systems contingency to business continuity late in the project causing some uncertainty about plan content</li> <li>• NIH - Ensuring risk planning did not interfere with ongoing patient care and research activities</li> </ul>	<ul style="list-style-type: none"> <li>• Revised and up to date continuity plans that can be applied to various disaster scenarios</li> <li>• Risk assessment methodologies</li> <li>• Improved documentation of business processes</li> </ul>
Risk Planning	Contingency Planning	<ul style="list-style-type: none"> <li>• Use GAO contingency planning guidelines as a starting point for planning</li> <li>• Develop OPDIV plans for all IT systems and infrastructure</li> <li>• Implement and test</li> </ul>	<ul style="list-style-type: none"> <li>• Contingency plans were developed and tested</li> <li>• Additional information gathered on system components and their relation to business process</li> </ul>	<ul style="list-style-type: none"> <li>• same as for continuity planning</li> </ul>	<ul style="list-style-type: none"> <li>• Reusable (with some modification) contingency plans for other IT disaster scenarios</li> </ul>

Phase	Activities	Primary Approaches	Results	Issues	Long Term Benefits (product, process, concept)
Day One	Day One Center Preparation	<ul style="list-style-type: none"> <li>• Develop overall plan, set up command centers, dry run tests</li> <li>• Provide training for staff</li> <li>• Clearly define reporting requirements and staff roles, and interfaces with the national HHS command center</li> </ul>	<ul style="list-style-type: none"> <li>• All Day One Centers were ready on schedule</li> <li>• Dry runs conducted</li> <li>• Developed procedures and mechanisms (e.g., use of WWW) for collecting and reporting information</li> <li>• Establish management and decision making hierarchy</li> </ul>	<ul style="list-style-type: none"> <li>• Peregrine software was used for status reporting and planning task action items. If sufficient lead-time had been available, each OPDIV would have fully incorporated and efficiently used Peregrine for OPDIV incident reporting and reduced Day One development costs.</li> </ul>	<ul style="list-style-type: none"> <li>• Experience in planning and operating a command center</li> </ul>
Day One	Day One Operations	<ul style="list-style-type: none"> <li>• Perform Day One activities as planned</li> </ul>	<ul style="list-style-type: none"> <li>• Day One rollover proceeded smoothly with no critical problems reported</li> <li>• No Y2K difficulties associated with using IT infrastructure for data collection and reporting</li> <li>• Several instances of unsuccessful hacker attacks</li> </ul>	<ul style="list-style-type: none"> <li>• Communication issues (i.e., the ICC changed their access methodology, which caused instructions to the HHS OPDIVs to be delayed and left little time for testing)</li> <li>• Employee compensation issues for Day One activities</li> </ul>	<ul style="list-style-type: none"> <li>• Various software tools that can be reused in the future for similar scenarios</li> <li>• Security tracking and exchange of information with OPDIVs was valuable</li> </ul>

Phase	Activities	Primary Approaches	Results	Issues	Long Term Benefits (product, process, concept)
Day One	Continuation Through Day Sixty	<ul style="list-style-type: none"> <li>• Continue with exception reporting and general monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Successful rollover</li> </ul>	<ul style="list-style-type: none"> <li>• No major issues</li> </ul>	<ul style="list-style-type: none"> <li>• No new items</li> </ul>

## SECTION 3

### LESSONS LEARNED

The challenge of Y2K was the combined requirements for software development, hardware acquisition, and process engineering. HHS's IT staffs had never been involved in a project of this magnitude before, and, unlike other projects, one that had an unmovable end date. A viable solution to the challenge required the staff to develop scenarios that could occur in case of a Y2K induced failure. By working through these scenarios and analyzing the results, the Department and the OPDIVs learned lessons that can now be applied with confidence to other large IT projects (e.g., PDD-63).

The key lessons learned by the Department and the OPDIVs are summarized in Table 3-1, which lists major lessons learned by two general categories: Management and Process. Within these groups, the lessons learned are listed in an order that reflects the number of organizations that reached the same conclusion.

#### 3.1 KEY LESSONS LEARNED AND RECOMMENDATIONS

Several factors aided the Department and the OPDIVs in the successful resolution of the Y2K problem and can be applied to future large-scale projects (the item numbers refer to Table 3-1 entries). The factors include:

##### 3.1.1 Obtain the Support and Backing of Management

The Y2K problem would not have been resolved successfully without upper management support at the Department and OPDIV levels. (See Item 1.) Early in the project many of the OPDIVs sought and received a solid commitment from their top management as well as the Secretary, the Deputy Secretary, and the ASMB. This commitment was vital to the basic success of the program. Without the strong endorsement of this management team, it would have been impossible to muster the quality and quantity of resources required for tackling a project with the scope and magnitude of the Y2K rollover. The range of resources allocated by management over the life span of the Y2K project included staff, funding, software, and equipment used for numerous activities (e.g., outreach programs, policies and procedures). In general, active involvement, oversight, and management by senior officials made it possible to resolve problems quickly, allocate resources effectively, and ensure agency-wide commitment to the effort. In addition, the IT team could not have completed the tasks needed to identify and resolve Y2K issues without the assistance of actual users.

- **To be successful in a project of this size, upper management must support it and assist in identifying essential resources as soon as possible.**

### **3.1.2 Develop Budgets and Secure Funding Early in the Process**

Effective IT program management requires early budget allocation. (See Item 4.) Program managers cannot plan the work, staffing, or contractor support without knowing that the funds are available. Good planning is an essential ingredient in this process because budgets must be developed early enough in the project's life cycle so funding can be made available, as it is needed. Without sufficient funding, staffing, equipment, services, and supplies can not be secured. Whenever possible, oversight agencies should generate data requests in the project to support funding requests and budget estimates early. The data requests should:

- include sufficient direction
  - define all the constraints bounding the particular budget exercise (e.g., time limitations, what the money can be used for, and the approximate amount of funding anticipated)
  - identify the source of the funding
  - give an approximate or actual date when a funding decision may be expected. If there will be multiple steps in obtaining the funding, explain the process being used and the possible dates for the follow-on data requests
  - provide the likelihood of attaining the requested funds
  - allow ample time for responding organizations to develop and submit the appropriate data
- **Future large-scale tasks must have sufficient budgets identified and funded at the task's outset to maximize success.**

### **3.1.3 Encourage Coordination, Cooperation, and Communication**

HHS is comprised of numerous OPDIV sites and offices throughout the country. Each office may operate slightly differently than the home office operates. One of the most crucial elements driving the success of the Y2K compliance project was effective communication. (See Items 2 and 5.) Each OPDIV was not only able to communicate effectively internally, but also to reach out to other OPDIVs and agencies, as well as to non-governmental business partners.

Coordination and timely communication were vital to the success of the project. An open flow of information among all the parties reduced confusion and saved time and money. Organizations learned from other's mistakes and did not reinvent good

ideas and solutions. Communication lines must remain unbroken from top management, which provides the overall vision and strategic guidance, to the operational staff, who must put the vision into practice by implementing the appropriate set of tasks and activities.

- **Effective cooperation is necessary for project success.**
- **In order to maximize success for future all-encompassing projects, the communication links and contacts made during the Y2K project should be maintained. Communication methods varied depending on the OPDIV, but the goal of maintaining efficient and cooperative relationships did not vary.**

### **3.1.3.1 Web Pages and Hot Lines**

As stated previously, effective and comprehensive communication within each OPDIV and among OPDIVs was crucial in this project's successful completion. Many OPDIVs and the Department developed web pages as a conduit for information dissemination. For example, FDA and IHS developed web-sites devoted to providing status information concerning medical devices threatened by Y2K non-compliance. This technology also proved quite effective as an outreach tool, providing update information to the public as well as to HHS' business partners. In another example, OS developed the CIO Secure website and the Peregrine Day One Report website to ensure that the communication channels developed during the Y2K project remain.

- **OPDIVs should maintain their web pages to be as current and useful as possible, preferably with automated updates.**

Hotlines also proved to be a useful tool for information dissemination. PSC's Emergency Response Center, HRSA, ACF, and other agencies developed centralized calling centers to provide Y2K status information. Either recorded message or person-to-person communication provided information. A HHS National Operations and Security Center could be an 800-service hotline center using Automated Call Distributor and voice response units.

- **Future large-scale projects would benefit from hot line utilization.**

### **3.1.3.2 Communication with States and Business Partners**

The Department and the OPDIVs must communicate with State, local, and tribal stakeholders concerning Health Care and Human Services issues. However, identifying the appropriate organization within the State was an arduous task. For example, the State CIOs report to different components than the State Health Care

Organization. Some States delegate Health Care responsibilities to county governments.

Effective communication was vital for the success of the Human Service Outreach Sector (i.e., a group composed of representatives from HCFA, HRSA, SAMHSA, AoA, and ACF). This group effectively communicated and coordinated with the States to assure those programs such as Child Welfare, Child Care, Temporary Assistance for Needy Families and others would not be affected by any Y2K-related failures. Sector outreach plans were distributed, informative web pages were developed, and help desks were activated to reach the numerous recipients of the Sector's services. Without the dedicated effort of this cross agency team, program beneficiaries would have endured undue and unnecessary concern over potential Y2K induced problems.

Future project challenges will require the Department, as well as its OPDIVs, to coordinate information flows with the States and business partners to minimize redundant communication, provide early identification of responsible parties, and maximize effective communication.

- **Standard approaches across HHS OPDIVs need to be used to reduce confusion at the State, local, and Tribal levels.**

#### **3.1.4 Define and Understand the Scope of the Project**

This step includes the necessity to communicate the challenge to all parties involved. It ensures that valuable resources can be applied to solving the root problem and rather than treating symptoms. (See Item 7.)

The earlier this task is accomplished, the more time an organization has to develop designs and plans, carry out preparations, and conduct operations. In addition, it allows an organization to assess its own capabilities and shortfalls with relation to the challenge being tackled. For example, by addressing the problem early on, OPDIVs were able to determine what parts of the Y2K project required them to seek outside, independent expertise. After making that determination, they were free to pursue getting the right contractors for each job without rushing through the critical steps of the process and possibly making costly mistakes.

- **It is imperative that the scope of the project be clearly defined early.**

#### **3.1.5 Institute Project Management for IT Programs**

The Y2K program required solid project management practices. (See Item 8.) The progress and status of activities needed to be monitored and assessed on a regular basis. Refining priorities, updating resource allocations, assessing risks,

developing plans, and revising schedules and budgets based on trustworthy information was paramount to keeping the Y2K project on track.

#### **3.1.5.1 Scheduling**

The first step in any large-scale project is to plan the work that has to be accomplished to reach the goal. For the Y2K challenge, HHS had to evaluate every system and the work that would be required to ensure system operability. Detailed schedules with interim milestones were produced throughout the Department. This standard practice proved beneficial when additional milestones were imposed by other government agencies. To accommodate such additions to the workload, OPDIVs adjusted their schedules to meet the necessary requirements.

➤ **Scheduling will be required for any future task of a similar magnitude.**

#### **3.1.6 Develop, Implement and Enforce Change Control and Configuration Management**

Use of a comprehensive change control and configuration management methodology was vital to the Y2K project. (See Item 12.) Modifications made to applications, systems, and plans that did not follow standard practices complicated and lengthened the remediation process.

To assess the magnitude of potential Y2K problems, each OPDIV had to know what IT assets were in place. To accomplish this goal, a variety of non-standard inventory spread sheets and data bases were developed listing every major software application, IT system, and supporting peripheral that could be affected by Y2K. Non-compliant equipment was removed from service and replaced with new, Y2K compliant hardware and software. However, automated configuration management, asset management, and problem management are required.

The IV&V tests performed for determining system compliance provided the Department with detailed information concerning their systems. An additional product resulting from this effort was a database of the Department's business partners. This database will prove quite valuable for future large-scale projects, which may require extensive communication outside of the Department.

➤ **The Department needs to maintain the comprehensive asset inventory and configuration management. This database will provide the Department with an accurate inventory of all-existing hardware and software.**

### **3.1.7 Focus Oversight Reporting on Critical Aspects of the Program**

Many reporting requirements were developed by oversight agencies. (See Item 3.) New requirements continued to be received throughout the process. This continuous process complicated an already complex project. As a result,

- the intended audience was not clearly defined
- the time allocated for report generation was not sufficient
- formatting and template requirements were inconsistent
- requests were redundant and excessive due to a lack of coordination, consolidation and reuse of original information by oversight agencies
- changes in guidance were made at the last moment throughout the process
- objectives were not communicated clearly

Some ad hoc reporting/data requests for Y2K had unclear objectives causing additional intense work effort, which proved costly to produce. Although many of the reports proved quite beneficial to the requesting organization, the additional time required from the OPDIVs interfered with the tasks being performed.

#### **3.1.7.1 Reporting**

The number of participants involved in addressing the Y2K problem made it difficult to quickly ascertain status. HHS's OPDIVs prepared a set of standard reports, which documented progress toward program completion. The Office of Management and Budget (OMB), the General Accounting Office (GAO), Congress, and the President's Council on Year 2000 Conversion Information Coordination Center (ICC) also imposed reporting requirements on the Department. HHS also required additional reports from each OPDIV to stay abreast of changes. The number and variety of required reports, as well as the different report audiences proved quite daunting and limited the time available to perform standard duties.

A proactive approach will minimize unproductive activities and contain the project's scope. Any change to the initial set of reports must be communicated in a timely manner to all entities responsible for reporting. In addition, the Department should generate summary reports with inputs from the OPDIVs, as needed. Maintaining the communication links and cooperative relationships should simplify this centralized reporting.

- **Upon program outset, the reporting requirements need to be identified, communicated, and followed. Similar reporting needs should be coordinated and standardized across Agencies and Departments.**

#### **3.1.7.2 Command Centers**

The potential severity underlying the Y2K project required each OPDIV and the Department as a whole to facilitate command centers. Many OPDIVs have not operated in a command center environment, so the concept was new to them.

The Department should establish a National Operating and Security Center (NOSC) to which OPDIVs provide system and network and management data and analyses. If contractor support is needed to help facilitate a center's operations, it is better to ensure contractor expertise early in the project's life.

- **Future large-scale projects, which rely on effective communication, should consider maintaining a consolidated command center to act as an information-clearing house for the involved parties.**

#### **3.1.7.3 Status Reporting**

The Department decided on a web-based tool to report Departmental status to the ICC. Most of the OPDIVs chose to use this tool to report their status to the Department and were trained to do so. Although the tool depended on the IT infrastructure and was, therefore, more complex than a simple manual system, its capabilities outweighed the complexity and risk. The tool can also be used on future projects (e.g. PDD-63).

- **Future projects should carefully determine reporting requirements and select an appropriate tool or method. Other considerations such as reuse of tools should also be considered.**

#### **3.1.8 Test IT Plans and Systems**

In order to validate its plans, the Department and the OPDIVs conducted reviews, tests, exercises, and simulations. (See Item 9.) These served two purposes. The first purpose was to ensure the quality of the plan before it was executed, and the second was to help reinforce the training through "hands-on" experience for participants (i.e., the personnel responsible for carrying out the plan when the real event occurred). Applications and end-to-end systems were tested for interoperability and correct operation before the date rollover.

- **Testing was vital to the success of the Y2K program.**

### **3.1.9 Adopt and Implement Uniform and Established Methodologies**

The Department and the OPDIVs planned and implemented the overall Y2K program based on the adoption of several established, proven, and authoritative methodologies. (See Item 10.) For example, the OPDIVs executed and revised their Y2K programs under the direction and guidance of GAO documentation. This served two important purposes. It provided a uniform methodology shared throughout the Government, thereby allowing common communication when required among partners; and it provided a strong source of authority for the approach taken. They also implemented proven and established methodologies in the key areas of business continuity planning and automated system testing, verification, and validation.

#### **3.1.9.1 Business Continuity and Contingency Planning (BCCP)**

As directed by the GAO, each OPDIV developed a Business Continuity and Contingency Plan (BCCP) for each mission critical system that could be followed in case of a Y2K emergency. Core business practices along with mission critical systems and business partners were identified and documented. Continuity plans focused on how services offered by HHS could continue in case of a Y2K induced failure, while contingency plans focused on the reparation steps needed to bring systems back on-line. This time-consuming task provided each OPDIV the opportunity to fully evaluate how it conducts business, how the available tools help facilitate business, and what needs to be completed to continue their mission to the public.

- **BCCPs will provide each OPDIV the guidance required during any emergency that affects normal operations.**
- **Each OPDIV should maintain a current BCCP to reflect changes in operations.**

### **3.1.10 Assign Personnel with the Necessary Skills and Talents**

Good management, decision making, and organizational skills are required to lead IT projects of the scale and scope of the Y2K program. (See Item 6.) Staffing essential positions with skilled people is essential for success of large-scale IT projects.

#### **3.1.10.1 Staffing**

Effective program management requires the best staff mix to complete the job. Each OPDIV identified a Point-of-Contact (POC) to act as the Y2K coordinator (i.e., the focal point for all Y2K information gathering and dissemination). The POC was not usually the CIO but had the support of the CIO to perform the job.

Work groups brought together staff from disparate offices and worked out requirements with all the participants involved.

- **Future challenges of a similar magnitude will benefit from appropriate POC assignments and work group initiatives.**
- **OPDIVs need to use HHS Desk Officers as extended staff. Desk Officers need to participate early in a process to ensure that successful communication between each OPDIV and the Department continues.**

#### **3.1.10.2 Compensation**

Projects that require substantial staff overtime are common in private industry, which has the means and methods to compensate staff who work long hours. Employee dissatisfaction is thus mitigated once excessive overtime starts.

- **Compensation plans must be addressed early in the process to ensure that the best staff is available, and that their efforts are appreciated and rewarded.**

#### **3.1.11 Use Independent Testing and Auditing for Quality Assurance**

IV&V was a critical component of ensuring compliance and reducing risk. (See 11.) Quality assurance was enhanced and confidence in the system/plan improved by having an objective reviewer approve/validate the system/plan. Independent audits and status assessments conducted during the project also served as valuable project management tools.

### **3.2 LONG TERM BENEFITS**

The Y2K project required extensive program management, participant awareness, system assessment, software remediation, system validation and verification, risk planning, Day One planning, and efficient communication within and outside HHS. To successfully overcome the problems that could emanate from a Y2K induced failure required the Department to produce an all-encompassing approach to reduce the possibility of failure, and decrease the risk should failure occur. Although the direct results are evident (there were no substantial Y2K problems in HHS), indirect results are not as evident but just as important. These include the following:

- Heightened awareness toward security issues was one long-term benefit of the Y2K project. The real risk of hacker activity was minimized by comprehensive approaches to secure internal networks, as well as networks connected to the public via the Internet. Firewalls were purchased and installed; processes were developed and instituted; and IT staffs were trained

on security measures that, when used properly, could identify network violations.

- Configuration Management (CM) processes and their applications were a result of the Y2K project. CM became an essential process in determining software viability. The underlying methodologies in CM will assist IT staffs to gather the needed information to maintain their system inventory databases. Proper adherence to CM and standardization of CM across OPDIVs should help identify tools that can be used in future projects of similar magnitude, thereby minimizing additional budget expenditures for new systems.

**Table 3-1. Key Y2K Lessons Learned**

No.	*	Key Lessons Learned	TOTAL	ACF	ADA	AHRQ	CDC	FDA	ICFPA	IRBSA	IHS	NIH	OS	PSC	SAMHSA
1.	M	Get management support and backing early in the project. Maintain senior leadership awareness and involvement in strategic IT issues. Direct and continuing involvement of senior management is vital. Active involvement, oversight, and management by senior officials made it possible to resolve problems quickly, allocate resources effectively, and ensure agency-wide commitment.	9		X		X	X	X	X	X		X	X	X
2.	M	Cross coordination and communications are important among all parties involved (e.g., among OPDIVs, among government agencies, between government and partners, between government and customers, and among partners). Coordinators proved to be a valuable resource. Communication must flow in both directions across all levels.	8		X			X	X	X	X		X	X	X

No.	•	Key Lessons Learned	TOTAL	ACF	AIA	AHRQ	CDC	FDA	HCPA	HRSA	IHS	NIH	OS	PSC	SAMHSA
3.	M	<p>Reporting to oversight agencies can cause confusion and consume unnecessary resources when the reporting requirements and guidelines are ill defined. Specific examples provided include:</p> <ul style="list-style-type: none"> <li>• Intended audience not defined.</li> <li>• Insufficient time allocated for report generation.</li> <li>• Inconsistent formatting and template requirements.</li> <li>• Redundant/excessive requests due to lack of coordination, consolidation, and reuse of original information by oversight agencies.</li> <li>• Last minute changes in guidance.</li> <li>• Unclear objectives.</li> </ul> <p>Some ad hoc reporting/data requests for Y2K had unclear objectives causing additional intense work effort, which proved costly to produce</p>	8	X		X	X			X	X	X	X	X	

No.	*	Key Lessons Learned	TOTAL	ACF	AgA	AHRQ	CDC	FDA	HCFA	HRSA	IHS	NIH	OS	PSC	SAMHSA
4.	M	<p>Projects require real funding to make progress. Evaluate and plan for staff/contract resources early in the program. Request funding data and estimates early in the process and provide clear direction. Allocate sufficient resources to accomplish the task. Whenever possible, oversight agencies should generate data requests for funding requests/budget estimates early in the project. The data requests should:</p> <ul style="list-style-type: none"> <li>• Include sufficient direction.</li> <li>• Define all the constraints bounding the particular budget exercise (e.g., time limitations, what the money can be used for, and the approximate amount of funding anticipated).</li> <li>• Identify the source of the funding.</li> <li>• Give an approximate or actual date of when a funding decision may be expected. If there will be multiple steps in obtaining the funding, explain the process being used and the possible dates for the follow-on data requests.</li> <li>• Provide the likelihood of attaining the requested funds.</li> </ul> <p>Allow ample time for responding organizations to develop and submit the appropriate data the first time.</p>	6		X	X				X			X	X	X
5.	M	<p>Ensure open communication between management and staff. Ensure a sense of ownership in any process by communicating the overall vision and strategic guidance of top management across all levels of the organization.</p>	5		X						X	X	X	X	X

No.	*	Key Lessons Learned	TOTAL	ACF	AdA	AHRQ	CDC	FDA	HCF/A	HRSA	IHS	NIH	OS	PSC	SAMHSA
6.	M	Pick people with good organizational and decision-making skills to lead key projects (i.e., "match talent to the task"). The program required attention to detail and persistent follow-through. The focused attention of a project coordinator was key to success.	5		X		X			X	X			X	
7.	M	Clearly define and understand the problem early in the process so that you can solve the real problem and not just treat the symptoms. Ensure broad conceptualization of project at onset. Work smarter not harder and avoid "haste makes waste" problems by understanding the problem and conducting planning appropriate to the task at hand.	4			X	X						X	X	
8.	M	Develop a viable methodology for monitoring project progress and evaluating risk that does not lead to unnecessary attention and concern due to flawed status information. Project focus must be maintained at all times. Collect and use project data in a timely manner. Prioritization of activities is very important.	4			X	X		X				X		
9.	P	Comprehensive testing of the IT environment is vital. Testing and "dry runs" of plans were important means of ensuring whether staff knew what to do. End-to-end testing was a valuable component of ensuring system interoperability. A cogent process for testing applications is required for applications before they are released. Rehearsal activities were essential.	6		X		X	X	X			X		X	

No.	*	Key Lessons Learned	TOTAL	ACF	AgA	AHRQ	CDC	FDA	HICPA	HRSA	IHS	NIH	OS	PSC	SAMHSA
10.	P	Adhere to industry best practices regarding IT infrastructure. Adopt and implement uniform and established methodologies. Good standards and procedures were important. Standardized procedures, products, and tools proved helpful. Disseminate clear policy and standards in the early stages of a project (i.e., don't send out a series of evolving policies and standards).	5		X		X	X	X					X	
11.	P	IV&V was a critical component of ensuring compliance and reducing risk. Quality assurance was enhanced and confidence in the system improved having an objective reviewer approve the system. Independent audits are a valuable management tool.	4				X	X	X					X	
12.	P	Use of a comprehensive configuration management methodology was invaluable. Develop, implement, and enforce strong change control and configuration management. Modifications were made that did not follow a standardized format of programming, and it complicated and lengthened the remediation process.	4						X		X		X	X	

\* Category:  
M - Management Related  
P - Process Related  
I - Implementation Related